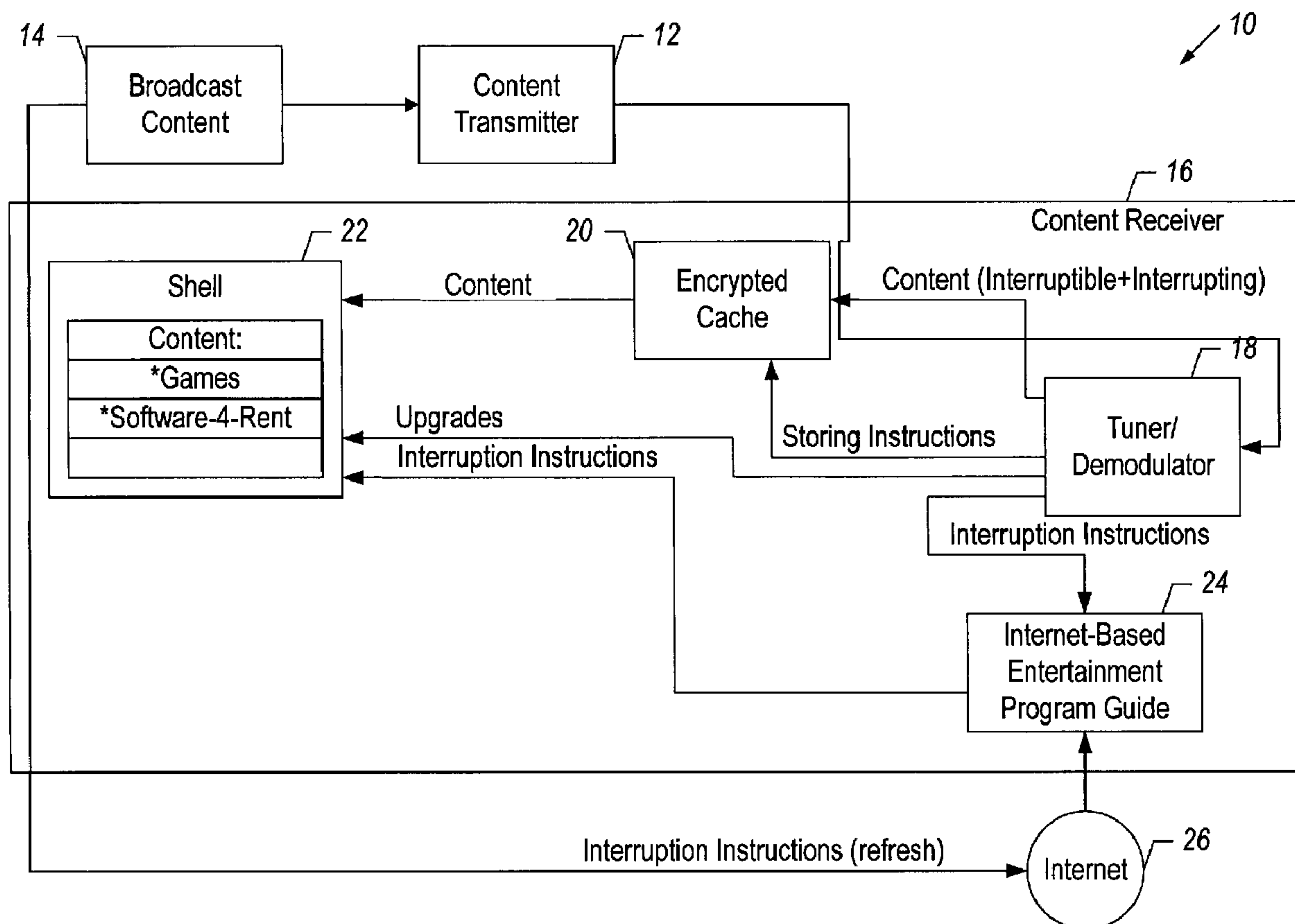




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(72) Inventeurs/Inventors:  
RASHKOVSKIY, OLEG, US;  
SHENDAR, NOAM, US  
(73) Propriétaire/Owner:  
BLACKARROW, INC., US  
(74) Agent: RICHES, MCKENZIE & HERBERT LLP

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(54) Title: PROVIDING CONTENT INTERRUPTIONS



(57) Abrégé/Abstract:

Content which users may wish to receive may be distributed with interrupting content such that the use of the content on the user's receiver may be interrupted and replaced with the interrupting content. The content which the user wishes to receive may be



(57) **Abrégé(suite)/Abstract(continued):**

software, audio, video, graphics or other material and the interrupting content in one embodiment of the present invention may be advertisements. In this way, the user's receiver may be utilized to determine when it is appropriate to interrupt the interruptible content with the interrupting content. This may provide a convenient mechanism for reduced price or free distribution of a wide variety of media currently provided only in physical form or only for free without any compensation to the content provider.

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(71) Applicant: **INTEL CORPORATION** [US/US]; 2200  
Mission College Boulevard, Santa Clara, CA 95052 (US).

(72) Inventors: **RASHKOVSKIY, Oleg**; 19312 Greenwood  
Drive, Cupertino, CA 95014 (US). **SHENDAR, Noam**;  
505 Cypress Point Drive #43, Mountain View, CA 94063  
(US).

(74) Agents: **TROP, Timothy, N.**; Trop, Pruner & Hu, P.C.,  
8554 Katy Freeway, Ste. 100, Houston, TX 77024 et al.  
(US).

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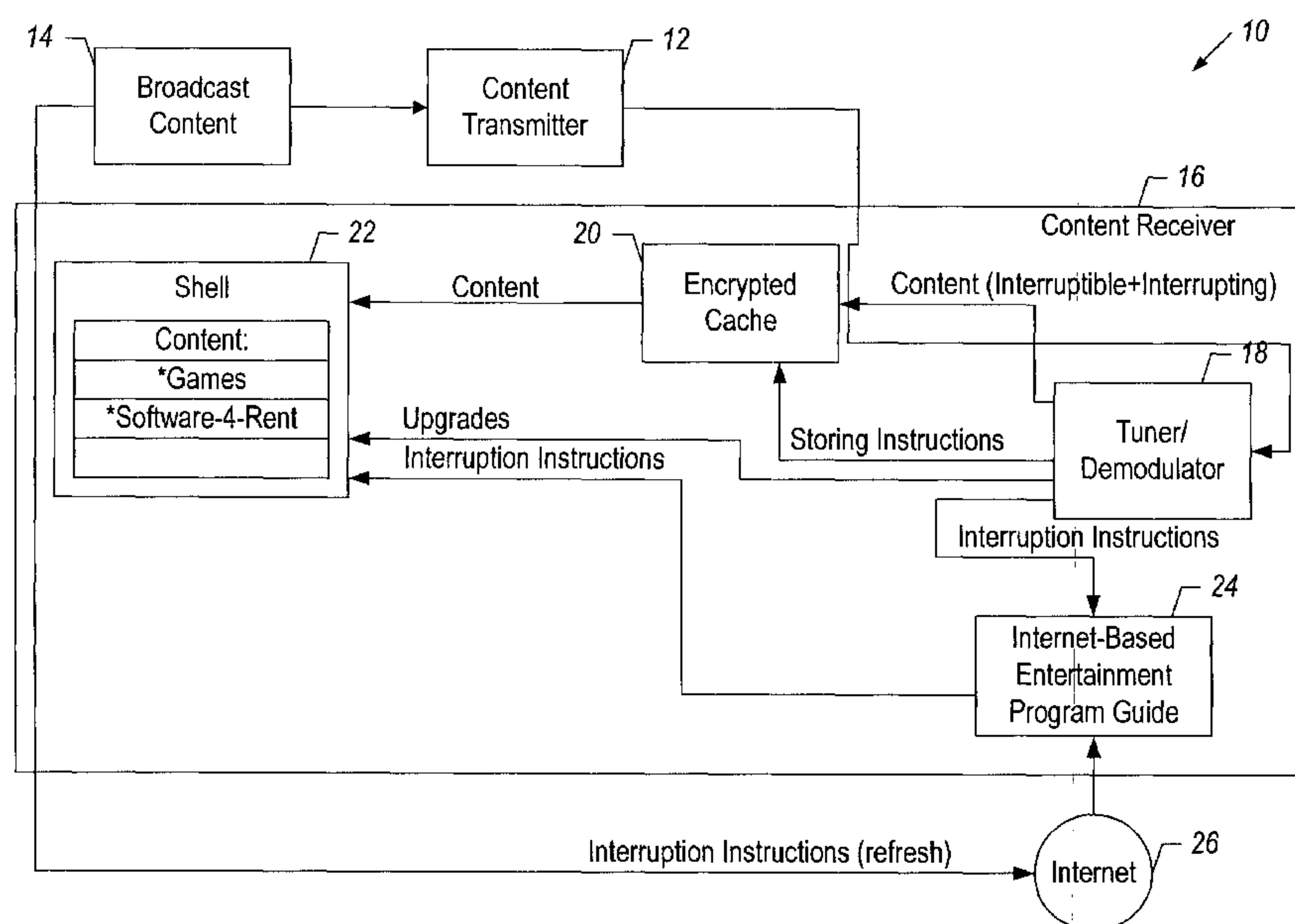
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(54) Title: SYSTEM AND METHOD FOR PROVIDING CONTENT INTERRUPTIONS



(57) **Abstract:** Content which users may wish to receive may be distributed with interrupting content such that the use of the content on the user's receiver may be interrupted and replaced with the interrupting content. The content which the user wishes to receive may be software, audio, video, graphics or other material and the interrupting content in one embodiment of the present invention may be advertisements. In this way, the user's receiver may be utilized to determine when it is appropriate to interrupt the interruptible content with the interrupting content. This may provide a convenient mechanism for reduced price or free distribution of a wide variety of media currently provided only in physical form or only for free without any compensation to the content provider.



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PROVIDING CONTENT INTERRUPTIONSBackground

This invention relates generally to broadband content distribution.

Broadband content distribution may involve the  
5 distribution of television programming to a large number of receivers as well as the distribution of other forms of content. Content which may be amenable to wide spread distribution include video, graphics, software, audio and games.

10 The ability to charge customers for content in many cases means that the type of content that may be distributed may be of higher quality. Thus, pay-per-view television programming is widely accepted.

However, there is a considerable demand for the  
15 distribution of content without charge. Conventional television broadcasts subsidize distribution through an advertising scenario. Similarly, in connection with the Internet, a large amount of content is distributed for free with the hope that viewers will patronize advertisers that  
20 pay for banner ads that accompany the content.

Thus, it would be desirable to include advertising material or other interruptions in the course of a wide variety of content that might be distributed for free or at reduced charge in a broadband distribution network.  
25 However, many content formats are not amenable to the ready incorporation of advertising material. For example, games and software could be distributed with banner ads. However, full screen display of advertisements is generally not viable because there is no way to know when to insert these  
30 advertisements in the course of the video game or software operation.

Thus, there is a need for ways to provide temporary interruptions, for example for purposes of inserting advertisements, in a wide variety of content distributed in a digital broadband distribution system.

5                   Summary of the Invention

Accordingly, it is an object of this invention to at least partially overcome some of the disadvantages of the prior art.

Accordingly, in one of its aspects, this invention  
10 resides in a system comprising a receiver to receive a first and second content; an encrypted cache, coupled to said receiver, to store said first and second content and to control unauthorized access to said first and second content; and a shell coupled to said cache to control access to said  
15 cache and to enable the use of the first content, automatically interrupt the use of the first content, and temporarily replace the first content with second content while controlling the use of the first content without interruption by said second content by controlling access to  
20 said cache.

In a further aspect, the present invention provides a system comprising: a receiver to receive a first and second content; an encrypted cache, coupled to said receiver, to store said first and second content and to control  
25 unauthorized access to said first and second content; and a shell coupled to said cache to control access to said cache and to enable the use of the first content, automatically interrupt the use of the first content, and to analyze the playback of said first content in order to locate a place to  
30 insert said second content in said first content and, based on said analysis, to find a place to temporarily replace the first content with the second content while controlling the

use of the first content without interruption by said second content by controlling access to said cache.

Further aspects of the invention will become apparent upon reading the following detailed description and drawings, which illustrate the invention and preferred embodiments of the invention.

#### Brief Description of the Drawings

Figure 1 is a schematic depiction of a broadband digital distribution system in accordance with one embodiment of the present invention;

Figure 2 is a flow chart for software which may be utilized on a receiver in the system shown in Figure 1; and

Figure 3 is a block depiction of a receiver in accordance with one embodiment of the present invention.

#### Detailed Description

A digital broadband distribution network 10, shown in Figure 1, may implement the distribution of a variety of content formats and the provision of content interruptions on a content receiver 16. The content receiver 16 receives content from a content transmitter 12 which in turn receives broadcast content from a content provider 14.

The content transmitted by the transmitter 12 may be made up of conventional content termed "interruptible content" and "interrupting content". Interruptible content is content whose operation, play, or use may be interrupted for the substitution of other content. The content which is temporarily substituted for the interruptible content is called the interrupting content.

In accordance with one embodiment, interruptible content that the user desires to receive may be interrupted with interrupting content that may help to pay for the interruptible content. The interrupting content may include advertisements.

The interruptible content may be video, graphics, audio, games, and other software such as application software. The interrupting content may be substituted for the interruptible content under control of the receiver 16  
5 in one embodiment.

The content from the content transmitter 12 is received by a tuner/demodulator 18 contained in the digital content receiver 16. The tuner/demodulator 18 tunes to one or more channels and demodulates those channels for display. In  
10 addition, the tuner/demodulator 18 may parse the interruptible and interrupting content and forwards that information to an encrypted cache 20. The tuner/demodulator 18 also parses storing instructions utilized for controlling the storage of the content. The storing instructions are  
15 also forwarded to the encrypted cache 20 for use in storing the content. In addition, the tuner/demodulator 18 may parse upgrades, provided with the content, for upgrading previously received content. Finally the tuner/demodulator 18 may parse interruption instructions from the rest of the  
20 content. These interruption instructions tell when to interrupt the interruptible content with the interrupting content. The interruption instructions may be forwarded to a program guide 24.

The program guide 24 may receive interruption  
25 instructions from a back channel which may be coupled to the broadcast content provider 14. The interruption instructions may be conveyed, for example, over the Internet as indicated at 26. In some cases, the interruption instructions may be updated, revised or extended and  
30 therefore it may be necessary to convey them after the original content is received.

The program guide 24 may provide a schedule of available information that may be received from the content

provider 14. This information may be accessed over the backchannel such as the Internet 26 to reduce the storage requirements on the content receiver 16. The interruption instructions, received over the back channel or as parsed by  
5 the tuner/demodulator 18, may be forwarded by the content guide 24 to a shell 22. The shell 22 in one embodiment of the present invention may be a software module that controls the use of content received from the broadcast content provider 14. Moreover, the shell 22 implements the  
10 interruption of interruptible content with interrupting content in accordance with interruption instructions received as described previously.

The encrypted cache 20 stores the content in a format that prevents decryption and theft by unauthorized  
15 individuals. The encrypted cache 20 may, for example, be part of a hard disk drive. When content is received by the system 10, the shell 22 stores the information on the hard disk drive and particularly in the encrypted cache. For example, the shell 22 may cause the content to be  
20 distributed to a variety of storage locations on the hard disk drive so that the content may not be continuously accessed in one contiguous hard drive area. Only the shell 22 can access the map which indicates where the content is stored on the hard disk drive and how it can be  
25 reconstructed to play back the content in a meaningful fashion.

Thus, as content is acquired from a source and stored through the shell into the hard disk drive, it is stored in a form which can only be access by the shell thereafter. To  
30 access the content one must access the content through the shell because only the shell knows where all the portions of the content are stored and how to reconstruct it in a meaningful fashion. Thus, the shell can control access in a

variety of ways. For example, the shell can prevent access, the shell can provide access only in return for either watching a commercial or paying a fee or the shell may limit the number of times that the content may be viewed or even  
5 the times when the content may be viewed.

Thus, in the embodiment illustrated in Figure 1, the shell 22 may have content, such as games or rentable software as a few examples. When the user wishes to use the content which is available from the content provider 14, the  
10 user may request a download of that information or that information may be conveyed during conditions of high bandwidth availability. Alternatively, other schemes for providing the content to the receiver 16 may be utilized. In general, the transport mechanism may include any digital  
15 mechanism such as satellite transmission, cable transmission or airwave broadcast.

Conceivably, the content may also be provided in conventional physical, portable forms such as compact disks (CD-ROM), digital video disks (DVD), flash memory or the  
20 like. The content, however received, is encoded in a way in which, absent the use of the shell 22, one would be unable to use, hear, view, play or otherwise enjoy the content. Thus, the system controls access to the content in a secure way using encryption provided with the content as conveyed  
25 over the transport media or as received in physical form by the user.

Once the information has been cached in the cache 20, the user can receive the right to enjoy play, hear or view the content as the case may be from the shell 22. The shell  
30 22 then releases the information for use in the appropriate format on the processor-based content receiver 16. The shell 22 may also control the number of times or the time period when the content may be used.

Moreover, the shell 22 monitors a criteria which determines when the content's use is to be interrupted with interrupting content. Thus, the shell 22 may force a mechanism wherein interrupting content may be temporarily  
5 played in place of interruptible content. For example, advertisements may be provided together with the interruptible content. Alternatively, the interrupting and interruptible content may be received at different times via different mechanisms.

10 For example, the interrupting content may be inserted at regular intervals. In other cases, the interrupting content may be inserted when advantageous conditions arise. For example, in connection with gaming software, when the user reaches a stopping point, the system may determine that  
15 the action has paused sufficiently that the interrupting content may be inserted. Moreover, instead of linearly inserting the interrupting content, the content may be inserted in a progressive fashion. Thus, the more the user uses the content the higher the rate at which interrupting  
20 content may be substituted.

In one embodiment of the present invention, the content that is being played may be interrupted with the play of the commercial in real time. That is, when the commercial is broadcast over a broadcast media, it may automatically be  
25 inserted into the playback of the content on the system 10 as well.

In one embodiment of the present invention, the interruptible content may be an advertisement; however, the interrupting content may also be a request that the user  
30 make some form of payment in order to continue to use the interruptible content. For example, the receiver 16 may be called upon to access backchannel to make a payment for the continued use of the content. When the receiver 16 does so,

the receiver 16 may be provided with a code either through the back channel or from the content provider which allows continued use of the interruptible content.

In some embodiments of the present invention, techniques may be utilized to reduce the likelihood that users of the system 10 will discontinue their use when the commercial is played. For example, an overlay may be provided over the commercial indicate what is coming up next in the content. For example, where the content is game and the commercial is inserted after the user reaches a given level, information may be provided about the next level as an overlay, for example, over the ongoing play of the commercial.

Referring to Figure 2, the software 28 for controlling the interruption of the interruptible content may be stored on a suitable storage medium such as a hard disk drive on the receiver 16. Initially, the software 28 waits for a request for content as indicated in diamond 30. Once such a request is received, the content may be supplied as indicated in block 32. In the same process, interruption instructions may be acquired as indicated in block 34 for the content which was requested and supplied in block 32. In addition, interrupting content may then be obtained as indicated in block 36. When an interruption criteria is satisfied, as determined in diamond 38, the ongoing use of the interruptible content may be interrupted as indicated in block 40. Thus, in one embodiment of the present invention, the interruptible content is interrupted upon satisfaction of an interruption criteria. The interrupting content, such as an advertisement, is substituted temporarily.

A check at diamond 42 then determines whether the interrupted criteria is complete. If not, the flow recycles to continue to check to determine whether the interruption

criteria is satisfied at diamond 38. Otherwise, the flow ends.

A processor-based content receiver 16 in accordance with one embodiment of the present invention shown in Figure 3, may be a set top box, a desk top computer, an appliance, a handheld device, or other form factors. The receiver 16 may include a processor 44. In one embodiment, the processor 44 may be coupled to an accelerated graphics port (AGP) chipset 46 for implementing an accelerated graphics port embodiment. The chipset 46 communicates with the system memory 52, the AGP port 48 and the graphics accelerator 50. A television 54 may be coupled to the video output of the graphics accelerator 50. The chipset 46 is also coupled to a bus 56 which may be, for example, a Peripheral Component Interconnect bus (PCI) bus. See revision 2.1 of the PCI Electrical Specification available from the PCI Special Interest Group, Portland, Oregon 97214. The bus 56 connects to a TV tuner/capture card 58 which provides tuning and demodulation for receiving the digital signal. The card 58 may be coupled an antenna 60 or other source of digital video such as a cable input, a satellite receiver or the like.

The bus 56 is also coupled to a bridge 62 that couples the hard disk drive 64 that may store the software 28 in one embodiment of the present invention. The bridge 62 is also coupled to another bus 66 which may be coupled to a serial input/output (SIO) device 68. In one embodiment of the present invention, the device 68 is in turn coupled to an interface 70 which may be an infrared interface. The interface 70 communicates with a remote control unit 72. Also connected to the bus 66 is a basic input/output system (BIOS) 74.

In some cases, a large amount of content may eventually be downloaded or otherwise acquired and stored in a storage medium associated with the system 10. For example, in conventional systems, the storage medium may be a hard disk drive. Thus, it may be useful for the user to know what content has been stored on the user's hard disk drive. A file may be assembled which gives the user a content guide that lists all the content which is still available for access through the shell 22. In this way, the user can select that content by selecting one of the entries in the content guide. For example, the entries in the content guide may be selected by mouse clicking on them causing the content to immediately begin play.

While a digital receiving system has been described above, the present application is equally applicable to analog systems such as analog television receivers which work with set-top boxes. In such case, storing instructions may be provided over the vertical blanking interval in one embodiment of the present invention. Alternatively, storing instructions may be received over the Internet or through some other source.

In another alternate embodiment, interruption instructions, interrupting content and interruptible content may be received over the Internet 26. In such case, the content may be forwarded through the program guide 24 and directly to the encrypted cache 20. As a result, the content bypasses the tuner/demodulator 18 but still ends up being stored in the encrypted cache 20 as described previously. That information may then be accessed through the shell 22 in the same way as information stored in the encrypted cache 20 via the tuner/demodulator 18. The interruption instructions may be sent through the program guide 24 to the shell 22.

While the present invention has been described with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended  
5 claims cover all such modifications and variations as fall within the true spirit and scope of this present invention.

What is claimed is:

We Claim:

1. A system comprising:
  - a receiver to receive a first and second content;
  - an encrypted cache, coupled to said receiver, to store said first and second content and to control unauthorized access to said first and second content; and
  - a shell coupled to said cache to control access to said cache and to enable the use of the first content, automatically interrupt the use of the first content, and to analyze the playback of said first content in order to locate a place to insert said second content in said first content and, based on said analysis, to find a place to temporarily replace the first content with the second content while controlling the use of the first content without interruption by said second content by controlling access to said cache.
2. The system of claim 1 wherein said system is a television receiver.
3. The system of claim 1 coupled to a back channel for receiving instructions about when to replace the first content with the second content.
4. The system of claim 1 or 3 including a device that parses content from instructions for replacing said first content with said second content.
5. The system of claim 4 wherein said device also parses instructions for how to store said first and second content.
6. The system of claim 1 wherein said shell periodically replaces the first content with the second content.

7. The system of claim 1 wherein said receiver includes a tuner that tunes to a digital channel and demodulates said first and second content.

8. The system of claim 1 wherein said receiver parses said first and second content from control information.

9. The system of claim 8 wherein said receiver parses from said first and second content, instructions for determining when said first content may be interrupted.

10. The system of claim 1 wherein said shell controls the decryption of said first content to prevent theft of said first content.

11. The system of claim 5 including content guide software that receives interruption instructions for interrupting said first content and replacing it with said second content.

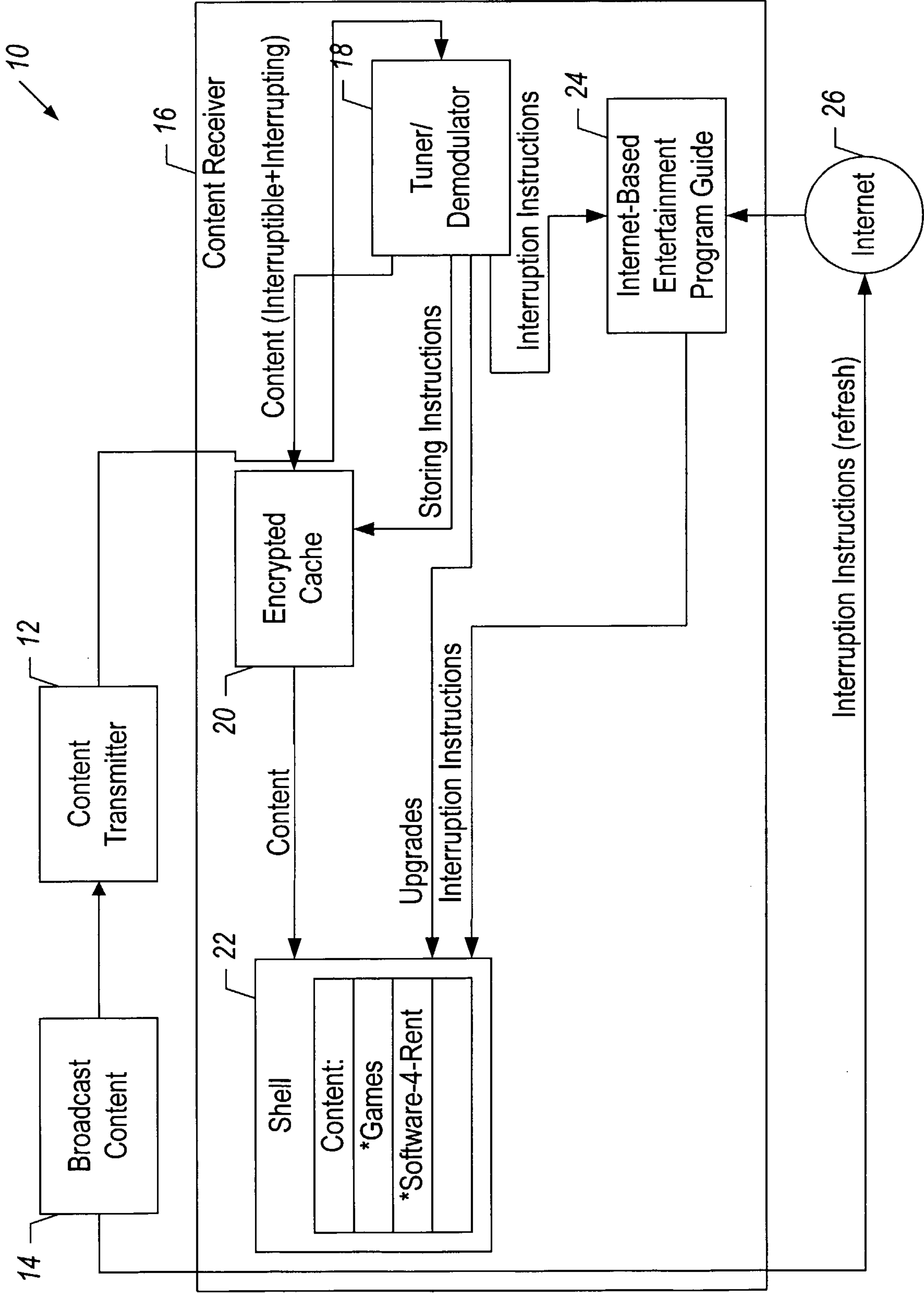
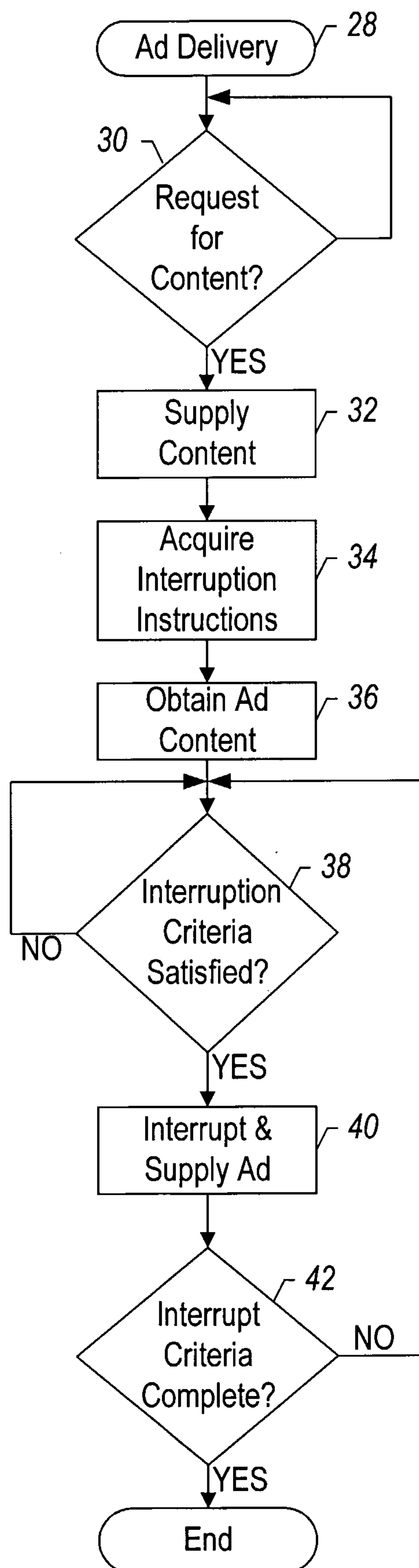


FIG. 1

2/3

**FIG. 2**

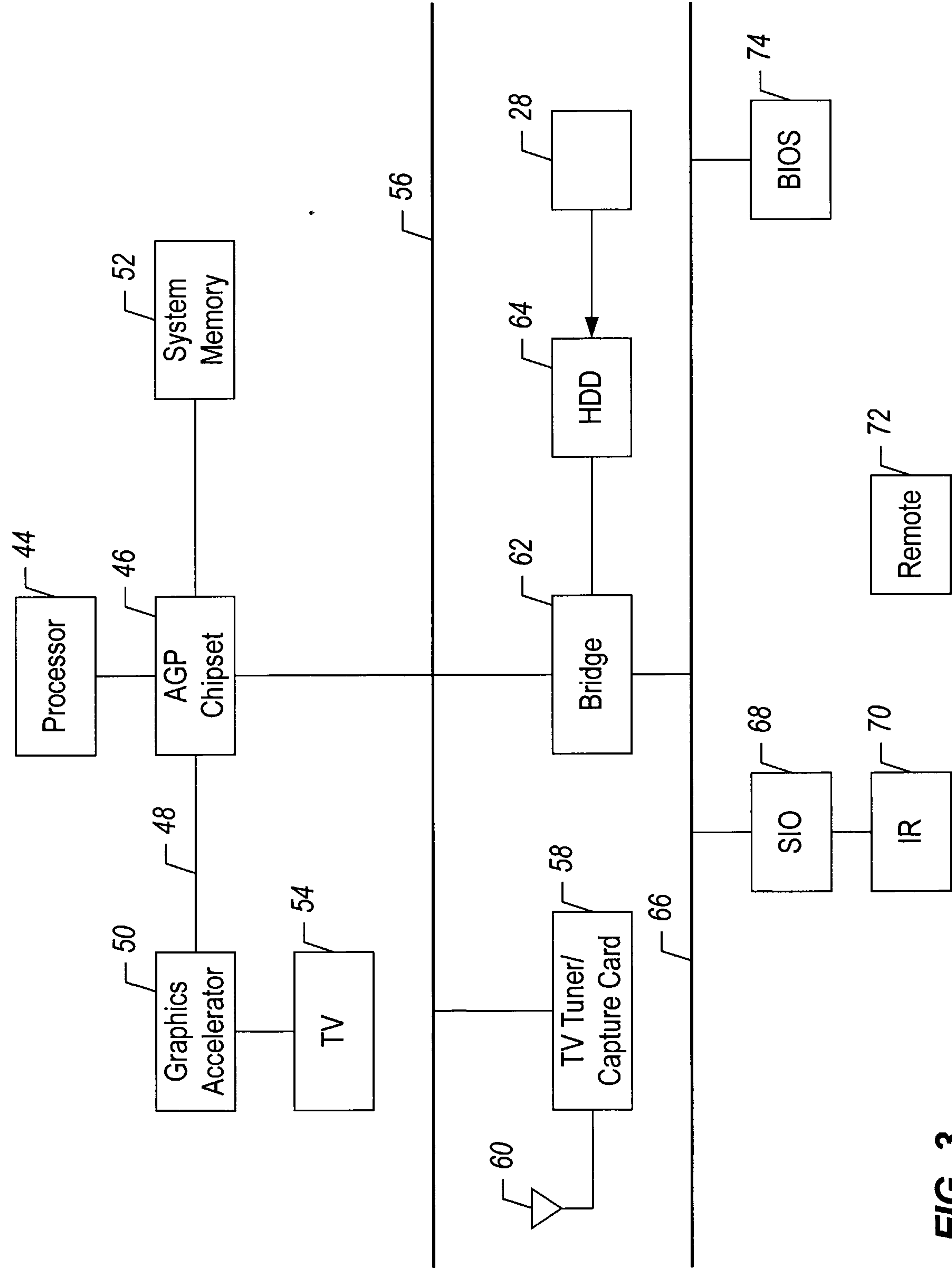


FIG. 3

